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April 5, 1957

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Dear Sir:

In accordance with your request I am submitting this letter in proposal form, which describes a development task that may be of interest to you.

The technical considerations involve a shutter mechanism which in its commercial form exhibits a rather high acoustic level when operated. The mechanism referred to is powered by a storage coil spring which by means of a rather high speed escapement governor controls the film transport and shutter drive mechanism. The shutter trip portion of the cycle is relatively silent because it operates at relatively low speeds with mechanism devoid of gears. The film advance portion of the cycle is, however, extremely noisy due to the audible "whine" characteristic of heavily loaded gears moving at relatively high speed. This is not an unusual condition, and is present in every camera capable of being cycled at a high rate of 2 frames per second. Our analysis of this cycle has led us to the conclusion that a complete silencing of this mechanism is feasible. The resulting audible level to which I refer is that measured with the unit in "operating" configuration.

Our solution calls for but one trade-off in terms of the original equipment and would affect the lowering of the cycle rate to 1 frame each 5 seconds instead of 1 each 0.5 seconds. By such means a direct solution may be envisioned which would involve the following:

1. Removal and relocation of the spring barrel to provide space for a low speed silent escapement governor.

2. Design and fabrication of this governor mechanism with new mounting plate maintaining the various drive connections.

3. Replacement of metal to metal contact where possible, by use of nylon sleeves and/or buttons.

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4. Design and fabrication of a new shutter mechanism mounting plate which supports the entire drive and shutter components but is mounted to the camera body and isolated by means of resilient washers. The floating action resulting will be small and will not effect photographic performance in view of the fact that this is a behind-the-lens shutter and is therefore already quite inefficient. This should not affect original performance in the slightest.

In summary then, what will be accomplished is:

1. Silencing of basic drive mechanisms including a friction governor.

2. Resilient mounting of entire mechanism to standard camera body.

As to estimated costs the following breakdown is submitted on one such development unit:

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Total $ 8578.20

I trust that this is the information desired. If further details are required, I shall be glad to supply these at your request.

Sincerely yours,

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HRG:aw

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